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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/489,192	01/20/2000	SCOTT A. FIELD	MSI-407US	5535

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EXAMINER

PARTHASARATHY, PRAMILA

ART UNIT PAPER NUMBER

2133

DATE MAILED: 11/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/489,192

Applicant(s)

FIELD, SCOTT A.

Examiner

Pramila Parthasarathy

Art Unit

2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-48 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 1/20/2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

1. Claims 1- 48 is presented for examination

### ***Drawings***

2.1. New corrected drawings are required in this application because in Fig. 2, the box entitled "subsystem" should be attributed a reference numeral "66" (Specification page 12 and 15).

2.2. New corrected drawings are required in this application because in Fig. 2, the box entitled Process Manager 60c is referenced in the specification as 60b. (Specification page 13).

Appropriate correction is required.

Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3.1 Claims 1-10, and 25 - 48 are rejected under 35 U.S.C. 102(b) as being anticipated by Herbert et al. (US Patent No. 5,757,919).

As per claim 1, Herbert teaches a method for encrypting information using a key in the physical memory and paging out the encrypted information (Col. 1 Lines 65 – 67 and Col. 2 Lines 2 – 3).

As per claim 2, Herbert teaches a method for encrypting, creating the key and page locking the key in the physical memory (Col. 1 Lines 60 - 65).

As per claim 3, Herbert teaches a method for creating the key during system boot up (Col. 2 Lines 45 – 52).

As per claim 4, Herbert teaches a method for generating a random key with a random key generator (Col. 2 Line 67 and Col. 3 Lines 1-2).

As per claim 5, Herbert teaches using RSA RC4 encryption algorithm to generate the key (Col. 3 Lines 25 – 32).

As per claims 6 and 8, Herbert teaches a method for calling an operating system kernel and the kernel using the page-locked key to encrypt the information. Herbert also teaches to implement claim 6 by an operating system memory manager (Col. 2 Lines 47– 49).

As per claim 7, Herbert teaches the use of an application to implement claim 6 (Col. 3 Lines 13 – 15).

As per claim 9, Herbert teaches a method for implementing with computer-readable media having computer-readable instructions to implement claim 1 (Fig. 3).

As per claim 10, Herbert teaches an operating system programmed with instructions to implement the method of claim 1 (Col. 5 Lines 59 – 67).

As per claim 25, Herbert teaches allocating a non-pageable page of main memory (Col.1 60-62); generating a random key (Col. 2 Line 67 and Col. 3 Lines 1-2); storing the random key in the non-pageable page of main memory; the operating system to encrypt information that might be paged out to the page file (Col.2 Lines 2-3).

As per claim 26, Herbert teaches using RSA RC4 encryption algorithm to generate the key (Col. 3 Lines 25 – 32).

As per claim 27, Herbert teaches a method for creating the key during system boot up (Col. 2 Lines 45 – 52).

As per claim 28, Herbert teaches a method for implementing with computer-readable media having computer-readable instructions to implement claim 25 (Fig. 3).

As per claim 29, Herbert teaches an operating system programmed with instructions to implement the method of claim 25 (Col. 5 Lines 59 – 67).

As per claim 30, Herbert teaches generating random key using a random key generation process; encrypting selected block of information in the main memory with software component that uses the at least one random key for encryption; decrypting with the software component that uses at least one random key for decryption; and also teaches placing the decrypted block of information in the main memory (Col.2 Lines 63-67 and Col. 3 Lines 1-5).

As per claim 31, Herbert teaches a method for creating the key during system boot up (Col. 2 Lines 45 – 52).

As per claim 32, Herbert teaches that restricting access to the random key can easily be implemented as software (Col. 3 Lines 13-15).

As per claim 33, Herbert teaches a method for calling an operating system kernel and the kernel using the page-locked key to encrypt the information (Col. 2 Lines 47– 49).

As per claim 34, Herbert teaches storing random key in main memory and locking random key in the main memory (Col. 2 Line 67 and Col. 3 Lines 1 – 8).

As per claim 35, Herbert teaches an operating system programmed with instructions to implement the method of claim 30 (Col. 5 Lines 59 – 67).

As per claim 36, Herbert teaches that a memory having pageable and non-pageable pages and key being configured for use in encrypting pageable information (Col. 5 Lines 26 – 29).

As per claim 37, Herbert teaches that this can easily be implemented as software (Col. 3 Lines 13-15).

As per claim 38, Herbert teaches that the key is accessible only to the software component (Col. 2 Lines 45 – 47).

As per claim 39, Herbert teaches that the application configured to call the software component to encrypt the pageable information (Col. 3 Lines 9 – 15).

As per claim 40, Herbert teaches to implement claim 37 by a memory manager (Col. 2 Lines 47– 49). Herbert also teaches the use of an application to implement claim 36 (Col. 3 Lines 13 – 15).

As per claim 41 and 42, Herbert teaches a computer program comprising a processor, main memory, secondary storage (Fig. 1) and encrypting information with a key that is page-locked in main memory and paging out, to secondary storage, the encrypted information (Col. 1 Lines 65 – 67 and Col. 2 Lines 2 – 3); accessing the encrypted information in the secondary storage (Col. 4 Lines 43 – 44); decrypting the encrypted information with the key that is page-locked in the main memory (Col. 3 Lines 2 – 5).

As per claim 43 and 44, Herbert teaches that the program generates the key and locks the key in the main memory and the same key is used to decrypt the information (Col. 4 Lines 23-25).



As per claim 45, Herbert teaches the use of software component that is programmed to encrypt and decrypt the information 42 (Col. 3 Lines 13 – 15).

As per claim 46, Herbert teaches the computer-implemented method of claim 45 wherein the software component comprises the operating system kernel (Col. 2 Lines 47 – 53).

As per claim 47, Herbert teaches an application programming interface comprising an interface method for encrypting pageable information with a key that is page-locked in the main memory and an interface method for decrypting encrypted information that is contained in the page file (Col. 2 Lines 63 – 67).

As per claim 48, Herbert teaches an application programming interface comprising a method for setting an attribute on a page of main memory, the attribute designating that the page must be encrypted with a key that is page-locked in the main memory prior to the page being paged out to the page file (Col. 3 Lines 13 – 15 and Col.1 60 – 63).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4.1. Claims 11-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herbert et al. (5, 757,919) in view of Bryant et al. (5,628,023).

As per claim 11, Herbert et al. discloses a method for page-locking a key in main memory; calling the operating system kernel to encrypt information; using the operating system kernel to encrypt the information with the page locked key (Col. 5 Lines 59 – 67). Herbert et al. does not disclose a method for restricting access to the page-locked key to only the operating system kernel. However, Bryant et al. discloses a method for restricting access to the page-locked key to the operating system kernel (Col. 9 Lines 64-67 and Col.10 Lines 1-4). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was

made to modify Herbert by including a method for restricting access to the page-locked key to the only the operating system kernel as taught by Bryant. Such modification would have been obvious because by restricting the access to the kernel the user or other applications cannot access the page-locked key thereby making the system more secure.

As for claim 12, Bryant discloses a method for calling the operating system kernel to encrypt information by an operating system memory manager (Fig. 7a) as claimed by claim 11.

As for claim 13, Bryant discloses a method for calling the operating system kernel to encrypt information by an application (Fig. 7a) as claimed by claim 11.

As for claim 14, Bryant discloses a method for calling the operating system kernel to encrypt information by designating a page in the main memory with a designation (Col. 9 Lines 37 – 39) and recognizing the designation (Col. 9 Lines 64-67).

As for claim 15, Bryant discloses memory manager is often implemented as part of the operating system (Col. 8 Lines 41 – 46).

As for claim 16, Herbert teaches specifying memory location and a memory size associated with the information to be encrypted (Col.3 Lines 43 – 48).

As for claim 17, Bryant discloses a computer-readable media having computer-readable instructions thereon which, when executed by a computer, perform the computer-implemented method of claim 11 (Fig. 1)

As for claim 18, Bryant discloses an operating system programmed with instructions which when implemented by the operating system, implement the method of claim 11 (Col. 9 Lines 35 – 39).

4.2. Claims 19 - 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herbert et al. (5, 757,919) in view of Buer et al. (6,003,117).

As per claim 19, Herbert et al. discloses a method for accessing encrypted information in the page file (Col. 4 Lines 43 – 44). Herbert et al. does not disclose a method for decrypting the encrypted information with a key that is page-locked in the main memory. However, Buer et al. disclose

a method for decrypting the encrypted information with a key that is page-locked in the main memory (Col. 2 Lines 27-36). Therefore, it would have been obvious to a person of ordinary skill in the art to modify Herbert by including a method for decrypting the encrypted information with a key that is page-locked in the main memory as taught by Buer to protect the key that is page-locked in the main memory thereby making the system more secure.

As per claim 20, Buer discloses placing the decrypted information in a page of main memory (Col. 2 Lines 1-2).

As per claim 21, Buer discloses placing the decrypted information in a page-locked page of main memory (Col. 1 Lines 19 - 23).

As per claim 22, Herbert teaches the computer-implemented method of claim 19 wherein the page locked key is accessible only to the operating system kernel (Col. 2 Lines 47 – 53).

As per claim 23, Herbert teaches a method for implementing with computer-readable media having computer-readable instructions to implement claim 19 (Fig. 3).

As per claim 24, Herbert teaches an operating system programmed with instructions to implement the method of claim 19 (Col. 5 Lines 59 – 67).

### ***Conclusion***

5. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks, Washington, D.C. 20231

**or faxed to:** (703) 872-9306 for all formal communications.

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,  
Arlington, VA, Fourth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pramila Parthasarathy whose telephone number is 703-305-8912. The examiner can normally be reached on 8:00a.m. To 5:00p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on 703-305-9595. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

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11/19/2003

*Emmanuel L. Moise*  
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PRIMARY EXAMINER  
H/A 2/33